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IS : 4803 - 1985

Indian Standard

METHOD FOR
DETERMINATION OF COLOUR FASTNESS OF
TEXTILE MATERIALS TO CHLORINATED
WATER (SWIMMING-BATH WATER)

(First Revision)

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AMENDMENT NO. 1 JANUARY 1989
TO
IS : 4803 - 1985 METHOD FOR DETERMINATION
OF COLOUR FASTNESS OF TEXTILE MATERIALS
TO CHLORINATED WATER (SWIMMING-BATH
WATER)

(First Revision)

(Clause 7.2) — Insert the following 'NOTE' under the clause:

'NOTE — In cases of doubt in the colour fastness ratings as assessed by an observer, the assessment should be done by at least three observers and the over-all average rating should be reported.'

(TDC 5)

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Indian Standard

METHOD FOR DETERMINATION OF COLOUR FASTNESS OF TEXTILE MATERIALS TO CHLORINATED WATER (SWIMMING-BATH WATER) (*First Revision*)

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(Continued on page 2)

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IS : 4803 - 1985

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(Continued on page 6)

Indian Standard
METHOD FOR
DETERMINATION OF COLOUR FASTNESS OF
TEXTILE MATERIALS TO CHLORINATED
WATER (SWIMMING-BATH WATER)
(*First Revision*)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 15 October 1985, after the draft finalized by the Chemical Methods of Test Sectional Committee had been approved by the Textile Division Council.

0.2 This Indian Standard was first published in 1968 and has been revised to align it with ISO 105-E03-1981 ' Colour fastness to chlorinated water (swimming-bath water) ' issued by the International Organization for Standardization. Changes have been made in the sampling clause, composition of sodium hypochlorite solution required for test and its preparation. It differs from ISO standard in respect of sampling clause and temperature of treatment.

0.3 In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS : 2-1960*.

1. SCOPE

1.1 This standard prescribes a method for the determination of colour fastness of textiles of all kinds and in all forms to the action of active chlorine in concentrations such as are used to disinfect swimming-bath water (break point chlorination).

2. PRINCIPLE

2.1 A specimen of the textile is treated with a very weak chlorine solution and dried. The change in colour of the specimen is assessed with the standard grey scale.

*Rules for rounding off numerical values (revised).

3. SAMPLING

3.1 Lot — The quantity of textile material purporting to be of one definite type and quality dyed or printed under essentially similar conditions shall constitute a lot.

3.2 Sample to determine conformity of a lot to a specification shall be selected so as to be representative of the lot.

3.3 Sample drawn in compliance with the material specification or as agreed to between the buyer and the seller to evaluate the colour fastness of the textile material in the lot to chlorinated water shall be held to be representative of the lot.

4. APPARATUS

4.1 A glass container or glazed china container which can be closed, for specimen and chlorine solution.

4.2 Grey Scale for Assessing Change in Colour — See IS : 768-1982*.

5. REAGENTS

5.1 Sodium Hypochlorite (NaOCl) Solution — of the following composition:

Active chlorine	— 140 to 160 g/l
Sodium chloride (NaCl)	— 120 to 170 g/l
Sodium hydroxide (NaOH)	— 20 g/l maximum
Sodium carbonate (Na ₂ CO ₃)	— 20 g/l maximum
Iron (Fe)	— 0.01 g/l maximum

5.2 Sodium Hypochlorite Solution — Containing 20 mg of active chlorine per litre, at pH 8.5 and may be prepared as follows.

5.2.1 Solution A — Dilute 4 ml of sodium hypochlorite solution (see 5.1) to 1 litre.

5.2.2 Solution B — Dissolve in 51.0 ml of 1 N sodium hydroxide (NaOH) solution, 18.64 g of potassium chloride (KCl) and 15.46 g of boric acid (H₃BO₃) and dilute to 1 litre.

5.2.3 To 50 ml of solution A add excess potassium iodide (KI) and hydrochloric acid (HCl) and titrate the liberated iodine with 0.1 N sodium thiosulphate (Na₂S₂O₃) solution using starch as indicator. Let the volume of 0.1 N sodium thiosulphate solution required be V ml.

*Method for evaluating change in colour (first revision).

5.2.4 For each 100 ml of working solution required, add $(28.2/V)$ ml of solution A to 20 ml of solution B, and dilute to 100 ml.

5.2.5 Check the pH of the solution (*see 5.2.4*) against a standard buffer solution electrometrically.

NOTE — The solution should be prepared just prior to use.

6. PREPARATION OF TEST SPECIMENS

6.1 If the textile to be tested is fabric, draw a 10×4 cm specimen from each piece in the test sample (*see 3.3*). Draw at least three such test specimens.

6.2 If the textile to be tested is yarn, knit or weave the test sample (*see 3.3*) into fabric and draw from it at least three 10×4 cm test specimens. Alternatively, make a wick or parallel lengths of yarn 10 cm long and about 0.5 cm in diameter, tied near both ends.

6.3 If the material to be tested is loose fibre, from the test sample (*see 3.3*) comb and compress enough of it to form a sheet of 10×4 cm, and sew it on to a piece of cotton adjacent cloth to support the fibre. Similarly, prepare at least two more test specimens from the test sample.

7. PROCEDURE

7.1 Weigh one test specimen accurately nearest to 1 mg. Put in the container sufficient amount of sodium hypochlorite solution (*see 5.2*) such that the liquor to material ratio is 100 : 1. Immerse the specimen in this solution ensuring that the specimen is thoroughly wetted. Close the container and allow the specimen to remain in solution at $27 \pm 2^\circ\text{C}$ for 4 hours in subdued light.

7.2 Remove the specimen from the container, squeeze or hydroextract it till no solution drips out of the specimen and dry it by hanging in air at room temperature. Evaluate the change in colour of the treated specimen with the grey scale (*see IS : 768-1982**) on the same day.

7.3 Repeat the test with remaining test specimens.

8. REPORT

8.1 Report individually the numerical ratings for change in colour of the test specimens.

*Method for evaluating change in colour (*first revision*).

IS : 4803 - 1985

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INDIAN STANDARDS INSTITUTION

Headquarters.

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002

Telephones : 3 31 01 31, 3 31 13 75

Telegrams : Manaksanstha
(Common to all Offices)

Regional Offices :

Telephone

*Western : Manakalaya, E9 MIDC, Marol, Andheri (East), 6 32 92 95
BOMBAY 400093

†Eastern : 1/14 C. I. T. Scheme VII M, V. I. P. Road, 36 24 99
Maniktola, CALCUTTA 700054

Southern : C. I. T. Campus, MADRAS 600113 41 24 42

Northern : B69 Phase VII, Industrial Focal Point, 8 73 28
S. A. S. NAGAR 160051 (Punjab)

Branch Offices :

'Pushpak', Nurmohamed Shaikh Marg, Khanpur { 2 63 48
AHMADABAD 380001 { 2 63 49

'F' Block, Unity Bldg, Narasimharaja Square, 22 48 08
BANGALORE 560002

Gangotri Complex, Bhadbhada Road, T. T. Nagar, 6 27 16
BHOPAL 462003

22E Kalpana Area, BHUBANESHWAR 751014 6 36 27

5-8-56C L. N. Gupta Marg, HYDERABAD 500001 22 10 83

R14 Yudhister Marg, C Scheme, JAIPUR 302005 6 98 32

117/418 B Sarvodaya Nagar, KANPUR 208005 4 72 92

Patliputra Industrial Estate, PATNA 800013 6 23 05

Hantex Bldg (2nd Floor), Rly Station Road, 32 27
TRIVANDRUM 695001

Inspection Office (With Sale Point) :

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PUNE 410005

*Sales Office in Bombay is at Novelty Chambers, Grant Road, 89 65 28
Bombay 400007

†Sales Office in Calcutta is at 5 Chowringhee Approach, P. O. Princep 27 68 00
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